AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-26. Canceled.

27. (Currently Amended) A computer-based system for statistical prediction of binary outcomes, said system comprising a processor, an input, an output, and a computer-readable storage medium;

wherein the processor generates a tree model using Bayesian analysis, the tree model comprising one or more nodes representing metagenes predictive of lymph node metastasis, and one or more nodes representing clinical risk factors;

wherein the metagenes are generated by sorting expression data from a plurality of genes into a plurality of clusters and extracting a singular dominant factor from each cluster using singular value decomposition,

wherein the processor generates a predicted disease outcome for a subject using the tree model; and

wherein the predicted disease outcome is displayed on the output; ~~The computer-based system of claim 18,~~ wherein the Bayesian analysis uses sequences of Bayes factor based tests of association to rank and select predictors that define a node split.

28. (Previously Presented) The computer-based system of claim 18, wherein the processor generates the tree model using forward generation of at least one class of trees with high marginal likelihood, wherein prediction of said class of trees is conducted using model averaging.

29. (Currently Amended) A computer-based system for statistical prediction of binary outcomes, said system comprising a processor, an input, an output, and a computer-readable storage medium;

wherein the processor generates a tree model using Bayesian analysis, the tree model comprising one or more nodes representing metagenes predictive of lymph node metastasis, and one or more nodes representing clinical risk factors;

wherein the metagenes are generated by sorting expression data from a plurality of genes into a plurality of clusters and extracting a singular dominant factor from each cluster using singular value decomposition,

wherein the processor generates a predicted disease outcome for a subject using the tree model; and

wherein the predicted disease outcome is displayed on the output;~~The computer-based system of claim 28,~~ wherein model averaging comprises: generating a weighted prediction of a tree by determining its implied posterior probability by a score; evaluating the score to exclude unlikely trees; evaluating the posterior and predictive distribution at each node and leaf of a tree; and applying said posterior and predictive distribution to the evaluation of each tree and averaging predictions across trees for future predictive cases.